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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,179	10/28/2003	Steven E. Curtis	135796	4289
7590	09/21/2004		EXAMINER [REDACTED]	MILLER, PATRICK L
John S. Beulick Armstrong Teasdale LLP Suite 2600 One Metropolitan Square St. Louis, MO 63102			ART UNIT [REDACTED]	PAPER NUMBER 2837

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/695,179	CURTIS, STEVEN E.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Patrick Miller	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-21 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 October 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All
  - b) Some \*
  - c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### *Specification*

1. The abstract is objected to because it is not sufficiently descriptive.

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### *Drawings*

2. Figure 3 is objected to because "F2" is not disclosed in the specification. Additionally, Fsub2 is not disclosed in the specification.
3. The drawings are objected to because Figure 4 has extraneous wording, which should be in the specification (See "Notes" below the servo control system diagram). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of

the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

4. Claims 15, 18, and 19 are objected to because of the following informalities: See bullets below. Appropriate correction is required.
  - Claim 9 discloses, "a feed forward term derived from a force function xi." This term is already disclosed in the claims from which this two claims depends (claim 8). Change "a" to "the."
  - Claim 19 discloses, "a collision" (line 4). Change "a" to "the."

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-6, 10-12, and 16-18 are rejected under 35 U.S.C. 112, first paragraph, because they do not disclose the method of conditionally differentiating. The specification discloses setting F = 0 (page 9) and setting Fsub1 = 0 (page 8). First, it is unclear which term, F or Fsub1, is modified so as to conditionally differentiate. Additionally, the specification does

not disclose under what circumstances and how the method selects a “0” or “1” value for F or Fsub1, so as to conditionally insert the feed forward loop.

6. Claims 1-6 and 19-21 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01.

- Claims 1-6 disclose injecting a feed forward term. This step does not sufficiently describe how the method conditionally differentiates.
- Claims 19-21 do not disclose the steps of a method that sets an initial aggressiveness level for responding to a collision and a desired aggressiveness level.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3, as best understood by the Examiner, is rejected under 35 U.S.C. 102(b) as being anticipated by Evans, Jr. (4,893,068).
  - Evans, Jr. discloses a method for controlling a servo system, wherein said method comprises injecting a feed forward term in the servo system (Fig. 8, #18 injects a feed forward term, #22).

- With respect to claims 2 and 3, a feed forward term is derived from a force function such that transfer function, output/input is optimized (Fig. 8,  $x_k$  is the force function, and #22 optimizes the transfer function, output/input function is optimized by #18; cols. 2/3, lines 56-68/1-50).

8. Claims 1-6, as best understood by the Examiner, is rejected under 35 U.S.C. 102(b) as being anticipated by Yim (5,723,965).

- With respect to claims 1-3, Yim discloses a method for controlling a servo system, wherein said method comprises injecting a feed forward term derived from a force function into the servo system, such that the output/input function is optimized (Fig. 1, #4 injects a feed forward term, T2 based on the force function,  $\omega_d^*$ ; cols. 3/4, lines 21-35/36-42).
- With respect to claims 4-6, Yim discloses optimizing the output/load function without using the feed forward loop (col. 3, lines 25-29).
- With respect to claim 13, Yim discloses a computer-readable medium encoded with a program configured to instruct a computer to inject a feed forward term in servo system (col. 4, lines 49-53; program controls model operation).
- With respect to claims 14 and 15, the program injects a feed forward term derived from a force function into the servo system, such that the output/input function is optimized (Fig. 1, #4 injects a feed forward term, T2 based on the force function,  $\omega_d^*$ ; cols. 3/4, lines 21-35/36-42).
- With respect to claims 16-18, the program optimizing the output/load function without using the feed forward loop (col. 3, lines 25-29).

9. Claims 19-21, as best understood by the Examiner, are rejected under 35 U.S.C. 102(e) as being anticipated by Tomita (6,784,632).

- Tomita discloses a method of configuring a servo system, wherein said method comprises: reducing the initial aggressiveness (response) level when responding to a collision (disturbance); and maintaining the desired aggressiveness (response) level when responding a disturbance is not detected (Fig. 11, when  $T_d$  is present, this increases the value of  $\theta$ , which decreases the initial aggressiveness,  $\theta_r$ . When  $T_d$  is not present,  $\theta_r$  remains the same; cols. 17/18, lines 43-67/1-5).
- With respect to claim 20, the system includes a feedback system (Fig. Feedback term,  $\theta$ ), and reducing the initial aggressiveness level comprises optimizing the feedback system for collisions (cols. 17/18, lines 43-67/1-5).
- With respect to claim 21, maintaining the desired aggressiveness comprises providing a feed forward term (Fig. 11, #10).

10. Claims 7 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Hazelton et al (6,686,990).

- Hazelton et al disclose an imaging system comprising: a radiation source (Fig. 1, #1); a radiation detector positioned to receive radiation emitted by the source (Fig. 1, #'s 2, 3, 4, 5, 6, 7, 8, R, and 13 receive radiation); a servo system configured to position at least one of said source, said detector, and an object to be scanned (Fig. 1, #'s 10, 11, and 15); a computer coupled to said source, said detector, and said servo system (Fig. 6, #120) and the computer configured to inject a feed forward term in said servo system (Fig. 7, #126).

- With respect to claim 8, the computer injects a feed forward term derived from a force function (Fig. 7, #126 derived from output of #115).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hazelton et al as applied to claim 7 above, and further in view of Yim (5,723,965).

- Hazelton et al do not disclose the limitations of claims 9-12.
- With respect to claim 9, Yim discloses a method for controlling a servo system, wherein said method comprises injecting a feed forward term derived from a force function into the servo system, such that the output/input function is optimized (Fig. 1, #4 injects a feed forward term, T2 based on the force function,  $\omega d^*$ ; cols. 3/4, lines 21-35/36-42).

Furthermore, with respect to claims 10-12, Yim discloses optimizing the output/load function without using the feed forward loop (col. 3, lines 25-29). The motivation to inject a feed forward term derived from a force function and optimizing the output/load function without using the feed forward loop is to cancel the disturbance, so that the effect of the disturbance is not reflected on the output velocity. This provides the advantage of making a consistent response performance for the output velocity (col. 5, lines 1-7).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to implement the servo control system of as described by Yim to control the imaging system of Hazelton et al, thereby providing the advantage of making a consistent response performance for the output velocity, as taught by Yim.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Patrick Miller*

Patrick Miller  
Examiner  
Art Unit 2837

*D*  
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pm  
September 18, 2004